

Amendments to the Specification:

Please add the following new paragraph after the title and before the paragraph starting on page 1, line 4:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP2004/009508.

Please replace the paragraph, beginning at page 2, line 1, with the following rewritten paragraph:

In addition, "Phosphor Handbook" (Ohmsha, Ltd., pages 219-220 and 225) and other non-patent publications disclose a technique in which each of these phosphors is made by the process of mixing certain raw materials and firing them at a temperature of 1000 deg-C or higher to cause a solid phase reaction.

Please replace the paragraph, beginning at page 4, line 14, with the following rewritten paragraph:

The discharge failures can be prevented to some extent if all the phosphors are composed of the materials having positive charges (+), such that the panel employs a combination of green phosphor made of a mixture of any of $\text{BaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{BaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{BaMgAl}_{10}\text{O}_{23}:\text{Mn}$, $\text{BaMgAl}_{10}\text{O}_{23}:\text{Mn}$, (Y, Gd) $\text{BO}_3:\text{Tb}$ and $\text{La PO}_4:\text{Tb}$, all having positive charges (+), in place of the Zn_2SiO_4 of negative charge (-), blue phosphor of $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$, and red phosphor of any of (Y, Gd) $\text{BO}_3:\text{Eu}$ and $\text{Y}_2\text{O}_3:\text{Eu}$.

Please replace the paragraph, beginning at page 9, line 26, with the following rewritten paragraph:

Fig. 4 is a cross sectional view of PDP 100. Dimension "W" of the spaces formed by barrier ribs 109, as shown in Fig. 4, is fixed to a given value, or approx. 130 μm to 240 μm , for example in the case of high-definition TV of 32 to 50 inch size. Inside the grooves between barrier ribs 109, there are phosphor layers formed of an yttrium oxide group red phosphor (R) of as red phosphor layers 110R, of which surfaces are charged positive (+), as well as phosphor layers formed of a blue phosphor (B) as blue phosphor layers 110B, of which surfaces are also charged positive (+). A material used for green phosphor layers 110G is phosphor particles made of a mixture of one of green phosphor compounds, $\text{CaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{EuAl}_{12}\text{O}_{19}:\text{Mn}$ and $\text{ZnAl}_{12}\text{O}_{19}:\text{Mn}$ having a magnetoplumbite crystal structure and surfaces of which are charged positive (+), and another green phosphor of any of aluminate group compounds, $(\text{Y}_{1-a-y}\text{Gd}_a)\text{BO}_3:\text{Tb}_y(\text{Y}_{1-x}\text{Gd}_x)\text{BO}_3:\text{Tb}$, $(\text{Y}_{1-a-y}\text{Gd}_a)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Tb}_y(\text{Y}_{1-x}\text{Gd}_x)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Tb}$, $(\text{Y}_{1-a-y}\text{Gd}_a)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Ce}_y\text{Tb}_y(\text{Y}_{1-x}\text{Gd}_x)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Tb}$, $(\text{Y}_{1-x}\text{Gd}_x)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Ce}$ and $\text{Y}_3(\text{Ga}_{1-x}\text{Al}_x)_3\text{Ga}_2\text{O}_{12}:\text{Tb}$ containing yttria and of which surfaces are also charged positive (+).

Please replace the paragraph, beginning at page 11, line 2, with the following rewritten paragraph:

The front panel and the rear panel produced as described above are placed together in a manner that the individual electrodes on the front panel cross at right angles with the address electrodes on the rear panel, and they are hermetically sealed by putting sealing frit throughout the perimeter of the panels and firing it at about 450 deg-C for 15 minutes to form hermetic seal layer 121. After that, the interior of discharge space 122 is evacuated to a high vacuum of 1.1×10^{-4} Pa, for instance, and filled with discharge gas comprising a mixture of inert gases such as He-Xe group, Ne-Xe group, He-Ne-Xe group and Ne-Kr-Xe group gases to a predetermined pressure (i.e., 50 to 80kPa) with 5% or more in the partial pressure of Xe. PDP 100 is thus manufactured. This panel is completed after being subjected to an aging process for 5 hours under the conditions of ~~175V~~ 185V in discharge voltage and 200kHz in discharge frequency.

Please replace the paragraph, beginning at page 13, line 2, with the following rewritten paragraph:

A material used as the green phosphor is any of magnetoplumbite group compounds defined as $M_{1-x}Al_{12}O_{19}:Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn, and a desirable range of "x" is $0.01 \leq x \leq 0.06$) having stable crystal structures, yttria group compounds with or without aluminum defined as $(Y_{1-a-y}Gd_a)BO_3:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_y$, Tb_y , and $(Y_{1-a-y}Gd_y)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_yY_3(Ga_{1-x}Al_x)_5O_{12}:Tb$, and a mixture of any of the above phosphors, all of which surfaces are charged positive. It is desirable here that substituted value "x" of Al for Ga, substituted value "a" of Gd for Y, and another substituted value "y" of Tb for Y are arranged to be within ranges of $0.1 \leq x \leq 1.0$, $0 \leq a \leq 0.9$ and $0.02 \leq y \leq 0.4$ respectively.

Please replace the paragraph, beginning at page 15, line 27, with the following rewritten paragraph:

Described next pertains to the green phosphors of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_a$ and $(Y_{1-a-y}Gd_a)(Al_{1-x}Ga_x)_3(BO_3)_4:Tb_y$, $(Y_{1-x}Gd_x)Al_3(BO_3)_4:Tb$.

Please replace the paragraph, beginning at page 16, line 2, with the following rewritten paragraph:

To start with, description is given of the magnetoplumbite crystal group compound of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_a$ (where "M" denotes one of Ca, Sr, Eu and Zn). Since the luminous material Mn is substituted by element M, this compound is expressed by the chemical formula of $(M_{1-x}Mn_x)Al_{12}O_{19}$, $(M_{1-a}Mn_a)Al_{12}O_{19}$. In the case of using the solid phase process, raw materials of calcium oxide (CaO), strontium oxide (SrO), europium oxide (Eu_2O_3), zinc oxide (ZnO), aluminum oxide (Al_2O_3) and the luminous material of ~~manganese carbonate~~ (MnO_2) are combined according to the required mole ratio of the oxide compounds and predetermined "a" and "x" values, in a manner so that their composite becomes $(M_{1-x}Mn_x)Al_{12}O_{19}$, $(M_{1-a}Mn_a)Al_{12}O_{19}$. The combined materials are then mixed with a small amount of flux (AlF_3 and NH_4F). Next, the mixture is fired at a temperature of 950 to 1,300 deg-C for 2 hours in an air ambient. After the produce is crushed lightly to an extent that cohered lumps are loosened, it is fired at 900 to 1,200 deg-C in a nitrogen atmosphere or nitrogen and hydrogen atmosphere. The produced particles are pulverized, and annealed at 500 to 900 deg-C in an oxygen atmosphere

or oxygen and nitrogen atmosphere in order to remove oxygen defects and to reduce their surfaces that adsorb water and hydrocarbon gases. The green phosphor which is charged positive is hence produced.

Please replace the paragraph, beginning at page 17, line 8, with the following rewritten paragraph:

In the process of making a mixed solution, raw materials of yttrium nitrate, $Y_2(NO_3)_3$, gadolinium nitrate, $Gd_2(NO_3)_3$, boric acid, H_3BO_3 , and europium nitrate, $Eu_2(NO_3)_3$ are mixed to that a mole ratio of (Y,Gd), B, and Eu must become 1-X:2:X (where $0.05 \leq X \leq 0.20$) as well as a ratio of 65:35 in the amount of Y and Gd elements. The mixed materials are then fired at 1,200 to 1,350 deg-C for 2 hours in an air ambient, and classified to obtain the red phosphor. Since the red phosphor is fired in the air ambient, it contains comparatively small number of oxygen defects even if it is not annealed in an oxygen and nitrogen atmosphere. However, it is desirable to anneal it again because defects may develop in the process of classification.

Please replace the paragraph, beginning at page 18, line 12, with the following rewritten paragraph:

As described above, green phosphors used in this invention are the magnetoplumbite group phosphor of $M_{1-a}Al_{12}O_{19}:Mn_a$ (where "M" denotes one of Ca, Sr, Eu and Zn) containing aluminum and of which surfaces are charged positive (+), and $(Y_{1-a-y}Gd_a)BO_3:Tb_y(Y_{1-x}Gd_x)BO_3:Tb$, $(Y_{1-a-y}Gd_y)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-x}Gd_x)Al_3(BO_3)_4:Tb$, $(Y_{1-a-y}Gd_y)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-x}Gd_x)Al_3(BO_3)_4:Ce,Tb$, $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_yY_3Al_3Ga_2O_{12}:Tb$ containing yttria and all of which surfaces are also charged positive (+).

Please replace the Table, beginning at page 19, line 12, with the following rewritten Table:

[Table 1]

Sample No.	Type and Combination of Green Phosphor	Type of Blue Phosphor	Type of Red Phosphor
1	$Ca_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.01, x=0.5$	$BaMgAl_{10}O_{17}:Eu$	$(Y,Gd)BO_3:Eu$
2	$Sr_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.02, x=1.0$	Same as above	Same as above
3	$Eu_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.04, x=1.0$	Same as above	Same as above
4	$Mg_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=0.5$	Same as above	Same as above
5	$Zn_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=1$	$(Ba,Sr)MgAl_{10}O_{17}:Eu$	$Y_2O_3:Eu$
6	$Sr_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=1$	Same as above	Same as above

7	Mixture of sample no. 1 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0, x=0.1$ and $y=0.02$ (mixing ratio of 45:55)	Same as above	Same as above
8	Mixture of sample no. 2 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0.5, x=0.5$ and $y=0.3$ (mixing ratio of 45:50)	Same as above	Same as above
9	Mixture of sample no. 3 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_y, Tb_y$, $a=0.9, x=1$ and $y=0.02$ (mixing ratio of 50:50)	Same as above	Same as above
10	Mixture of sample no. 4 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0, x=1$ and $y=0.4$ (mixing ratio of 40:60)	Same as above	Same as above
11	Mixture of sample no. 5 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0.5, x=0.8$ and $y=0.1$ (mixing ratio of 40:60)	Same as above	Same as above
12	Mixture of sample no. 6 and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y$ $a=0, x=1$ and $y=0.03$ (mixing ratio of 30:60) $(Y_{1-y})_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y$ $x=1$ and $y=0.03$ (mixing ratio of 30:60)	BaMgAl ₁₀ O ₁₇ :Eu	(Y, Gd)BO ₃ :Eu
13	Mixture of sample no. 4 and $(Y_{1-a-y}Gd_a)BO_3:Tb_y$ $a=0.5$ and $y=0.03$ (mixing ratio of 40:60)	Same as above	Same as above
14*	Mixture of Zn ₂ SiO ₄ :Mn and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3BO_3:Tb_y$ $a=0.5, x=1$ and $y=0.03$ (mixing ratio of 50:50)	Same as above	Same as above
15*	Mixture of BaAl ₁₂ O ₁₇ :Mn and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3BO_3:Tb$ $a=0.5, x=1$ and $y=0.03$ (mixing ratio of 50:50)	Same as above	Same as above
16*	Zn ₂ SiO ₄ :Mn	Same as above	Same as above
17*	BaMgAl ₁₄ O ₂₃ :Mn, Eu	Same as above	Same as above
18*	BaAl ₁₂ O ₁₉ :Mn	Same as above	Same as above
19*	Mixture of BaAl ₁₂ O ₁₉ :Mn and LaPO ₄ :Tb (mixing ratio of 50:50)	Same as above	Same as above

* Sample numbers 14 to 19 are reference samples for comparison.

Please replace the paragraph, beginning at page 21, line 2, with the following rewritten paragraph:

Phosphor particles used as the green phosphors of samples 7 to 13 are a variety of mixed combinations between one of the magnetoplumbite group compounds $M_{1-x}Al_{12}O_{19}:Mn_x$ $M_{1-a}Al_{12}O_{19}:Mn_a$ (where M represents one of Ca, Sr, Eu and Zn) and one of yttria group compounds $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_5O_{12}:Ce_yTb_y$ and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y(Y_{1-a-y}Gd_a)BO_3:Tb_y(Y_{1-b-y}Gd_b)BO_3:Tb_y$ which are charged positive. Also, phosphor particles used are one of (Ba,Sr) $MgAl_{10}O_{17}:Eu$ and $BaMgAl_{10}O_{17}:Eu$ as the blue phosphors, and one of $Y_2O_3:Eu$ and $(Y, Gd)BO_3:Eu$ as the red phosphors. Table 1 also shows individual values of "a", "x", "b" and "y", and kinds of the M element.

Please replace the paragraph, beginning at page 21, line 11, with the following rewritten paragraph:

The green phosphors of samples 14 to 19 for the comparison purpose are phosphor materials, each containing any one of the conventional chemical compound $Zn_2SiO_4:Mn$, β -alumina crystal compounds $BaAl_{12}O_{19}:Mn$, $BaAl_{12}O_{17}:Mn$ and $BaMgAl_{14}O_{23}:Eu, Mn$, and phosphoric acid compound $LaPO_4:Tb$, all of which are charged negative (-). These samples also use the blue phosphor of $BaMgAl_{10}O_{17}:Eu$, and the red phosphor of $(Y, Gd)BO_3:Eu$. Table 1 shows compositions of the individual phosphors.

Please replace the paragraph, beginning at page 23, line 1, with the following rewritten paragraph:

Table 2 shows results of the above experiments 1 through 4 on the rates of change in the brightness degradation of the green color, and the brightness of as well as the full-on white screen, and also presence and absence of the address error.

Please replace the paragraph, beginning at page 23, line 4, with the following rewritten paragraph:

As shown in Table 2, the green phosphors provided in the reference samples 14 through 19 are a mixture of $Zn_2SiO_4:Mn$ and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y, Gd)BO_3:Tb$ for the sample 14, a mixture of $BaAl_{12}O_{19}:Mn$ and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y, Gd)BO_3$ for the sample 15, $Zn_2SiO_4:Mn$ for the sample 16, $BaMgAl_{14}O_{23}:Mn, Eu, Mn$ for the sample 17, $BaAl_{12}O_{19}:Mn$ for the sample 18, and a mixture of $BaAl_{12}O_{17}:Mn$ and $LaPO_4:Tb$ for the sample 19, and the blue phosphors provided are $(Ba, Sr)MgAl_{10}O_{17}:Eu$, $BaSrMgAl_{10}O_{17}:Eu$ for all of them. Therefore, as shown in Table 2 large amounts of water and hydrocarbon gases were adsorbed by these phosphors. The amounts of adsorbed water, in particular, were 2 to 5 times as large as compared to those of the embodied samples of this invention. The amounts of hydrocarbon gases were also larger by 2 to 3 times, although absolute amounts of them are 1/5 to 1/10 of the water.

Please replace the paragraph, beginning at page 25, line 1, with the following rewritten paragraph:

To this contrary, all of the panels having the green, blue and red color combinations of samples 1 to 13 showed only small degrees of change in the brightness of the individual colors attributable to the ultraviolet rays (in 147nm) and the discharge sustaining pulses, and they did not exhibit any reduction in the color temperature, address errors, and clogging of the nozzle in the process of depositing the phosphors. This is because they use the green phosphors made of any one or a mixed combination of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_a$ of the magnetoplumbite crystal structure containing aluminum, and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_5O_{12}:Ce_{y7}Tb_y$ and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y(Y_{1-b-y}Gd_b)BO_3:Tb_y$ of the yttria group containing yttrium or aluminum, instead of the conventional green phosphors which are liable to adsorb water and hydrocarbon. In other words, they restrict release of the water and hydrocarbon inside the panels, and prevent degradation in the brightness due to the discharge and address errors attributable to the deterioration of MgO.